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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,944	04/21/2004	Gregory J. Smith	50019.276US01/P05838	7191

23552 7590 01/17/2007  
MERCHANT & GOULD PC  
P.O. BOX 2903  
MINNEAPOLIS, MN 55402-0903

EXAMINER
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LAXTON, GARY L

ART UNIT	PAPER NUMBER
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2838

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/828,944

Applicant(s)

SMITH, GREGORY J.

Examiner

Gary L. Laxton

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 10/24/2006 have been fully considered but they are not persuasive.

Applicant argues that the switching power converter is arranged such that error amplifier and associated compensation circuits are unnecessary in the converter circuit of the instant invention. The examiner asserts that any error amplifier and associated compensation circuits of any prior art circuits are also unnecessary for operation of any power converter. Furthermore, being unnecessary does not particularly exclude the circuit components from the power converter. In other words, just being unnecessary does not mean they do not have to be excluded from the circuit. They are merely unnecessary. Therefore, the examiner maintains the rejections.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 9-14 and 23-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Umminger et al.

Umminger et al disclose an inductor (16); switching circuit (13); sense circuit (17); feedback circuit (20, 21); comparator circuit (18); one shot circuit (11); n-Fet (13); resistance circuit (15; col. 4 line 22); PLL circuit (34); furthermore, the rest of the circuit components including the error amp, and any compensation circuits are unnecessary for circuit operation.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-8, 20, 21 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umminger et al. in combination with Roman.

Claims 3-8; Umminger et al disclose an inductor (16); switching circuit (13); sense circuit (17); feedback circuit (20, 21); comparator circuit (18); one shot circuit (11); n-Fet (13); resistance circuit (15; col. 4 line 22); PLL circuit (34).

However, Umminger et al do not disclose the resistance circuit being a resistor.

Umminger et al disclosed using the resistance of the FET to measure the current.

Roman teaches using an actual resistor to measure the current (128 & resistor) of the inductor to generate a control signal used in the control of the switching of the transistors to eliminate noise normally generated from the switching of conventional regulators.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Umminger et al to include a resistor to sense the current

through the inductor as taught by Roman in order to use the current through the inductor to control the switching times of the switching circuit in order to reduce EMI noise normally generated by switching regulators.

Claims 20, 21 and 29; Umminger et al disclose an inductor (16); switching circuit (13); sense circuit (17); feedback circuit (20, 21); comparator circuit (18); one shot circuit (11); n-Fet (13); resistance circuit (15; col. 4 line 22); PLL circuit (34).

However, Umminger et al do not disclose the freewheel switch (15) being a diode.

Roman teaches that switching regulator 102 includes switching transistor(s) 106. Switching transistor(s) 106 can be implemented as a standard single switching transistor (along with a freewheeling diode) or a pair of synchronously switched transistors (col. 3 lines 36-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Umminger et al to include a diode in place of switch (15) in order to implement a standard well known switching regulator using a single switching transistor with freewheel diode as is well known in the art and as taught by Roman.

6. Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umminger et al. in combination with Joyce.

Umminger et al disclose the claimed subject matter in regards to claim 13 supra, except for a trans-conductance circuit and a current source circuit.

Joyce teaches a phase lock loop (figure 4) comprising a trans-conductance circuit (98) and current source (104) in order to improve the linearity sweep of the output frequency.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Umminger et al to include a PLL circuit that provides a bias signal and improves the linearity sweep of the output frequency as taught by Voyce; wherein the PLL circuit includes a trans-conductance circuit and current source that provides the bias signal.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L. Laxton whose telephone number is (571) 272-2079. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Gary L. Laxton  
Primary Examiner  
Art Unit 2838

1/8/2007